CP-108 Wireless LAN PCMCIA Card

User's Manual

Inventec @ppliances Corp.

IMPORTANT

This document contains important Information, please read it carefully before using this product.

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Revision History

Date	By	Revision	Comments
01/15/2002	Danny Shih	Draft	Initial Draft
			1.

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1. Introduction

The CP-108 is a wireless PCMCIA NIC Card. 2.4GHz Direct Sequence Spread Spectrum (DSSS) Wireless PCMCIA NIC Card, Type II, Plug and Play PC Card 2.1 Compliant. Supports ad-hoc (peer to peer) and infrastructure (communication to wired networks via Access Points), the Firmware implements the full IEEE8.2.11b wireless LAN MAC Protocol. It supports BSS and IBSS operation under Function (PCF). The low level protocol function such as RTS/CTS generation and acknowledgment, fragmentation and de-fragmentation, and automatic bacon monitoring are handled without host intervention. Active scanning is performed autonomously once initiated by host command. Host interface command and status handshakes allow additional firmware function specific to Access Point applications are also available.

2. Hardware Installation

Insert your CP108 PC Card

1. Unpack your CP108 PC Card kit and verify that all items are present, as described in "Kit Contents".
If any of the items described appear to be damaged or missing, please contact your supplier.

2. Insert the CP108 PC Card into the PC Card slot of your computer.

Ifyou wantto installthe PCCard into a desktopcomputer,usean
ISA Adapter or PCI Adapter.

3. Install Drivers

1. Before You Start the Installation

Beforeyou startthe installation,you areadvisedto keep theWindows
CD-ROM or software diskettes close at hand. If your computer came with a
factory-installed Windows operating system, these files will be stored on
your computer's hard disk, in the form of cabinet (*.cab) files.
NOTE:
If you are upgrading from an earlier version of the CP108
Miniport driver, please read Appendix B of the CP108 PC Card -User's
Guide provided on the CP108 Software CD-ROM.

2. WhatYou Need to Know

Installing a CP108 PC Card requires the same level of expertise that you
would need to install a standard Ethernet network adapter card. It is
assumed that you have a working knowledge of standard Windows 95/98
operations and of installing network adapter cards. Refer to the Windows
Help when necessary (on the Windows task bar, press the **Start** button and

3. Driver Installation for Windows 95/98

Windows 95/98 operating systems support "Plug & Play" for PC Cards. Once
you insert the CP108 PC Card into your computer, these operating
systems will automatically:
n Detect the card, and enable the CP108 Driver, or
n Start the **Add New Hardware** wizard and prompt you to install the driver,
when the operating system cannot find the required driver.
This would typically occur when inserting the CP108 PC Card into
your computer for the very first time.
To install the driver proceed as follows:

1. IfWindows starts the**Add New Hardware** wizard follow the instructions of
the **New Hardware Found** wizard to installthe drivers.
n When you are prompted to locate the driver installation files:
— Select the CP108 CD-ROM that was included with your

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PC Card kit and.
— If you downloaded the drivers from the Inventec website
navigate to the folder that matches your Operating system.
Windows 95:D:\Drivers\Win_95
Windows 98:D:\Drivers\Win_98
Windows 2000:D:\Drivers\Win_2000
When finished installing the drivers, Windows automatically opens the
Add/Edit Configuration Profile window.

2. Continue with setting the basic parameters.

4. PRISM WLAN Configuration

1. Introduction

The "Wireless NIC", model WL271, is a PC peripheral that designed for PC user to extend the PC's capability of mobile communication in office environment. The form factor is small to adapt for the PCMCIA type II socket that most of notebook PC had. With the cooperation with AP201, Wireless LAN Access Point, notebook PC user can communicate with those PCs user already existed in IEEE 802.3 networking environment in comfortable mobility.

The WL271 Wireless Local Area Network (WLAN) Interface card enables high-speed access to Internet and intranet assets without wires. This card uses the IEEE 802.11 protocol to enable communications between the host computer and either another host computer or a network, using the 2.4GHz ISM Radio Band for the communications medium. The host computer uses the WL271 Wireless LAN card for communications in the same way that it would use an Ethernet Network Interface Card.

2. Utility Installation

The PRISM WLAN Configuration Utility is installed simultaneously with the driver by executing the 'PRISM for Windows.exe 'file.

The following illustration shows this program's initial screen: When you click the Finish button in this screen, both the driver and the Configuration Utility are installed on your computer.

3. System Tray Icon

After the installation of the PRISM WLAN Configuration Utility, its icon appears in the System Tray in the bottom right corner of your desktop.

The color behind the Intersil logo indicates the link status.

  Red indicates no or very poor link quality.

  Yellow indicates a usable but weak link.

  Green indicates a strong link.

You can also view the status of the link by placing the cursor over the Configuration Utility icon, as shown in the following illustration. This illustration indicates that the PRISM WLAN Card is able to communicate, but that the signal to the radio is weak.

Icon Menu

Clicking the left mouse button on the System Tool Tray Icon displays a menu similar to the following illustration:
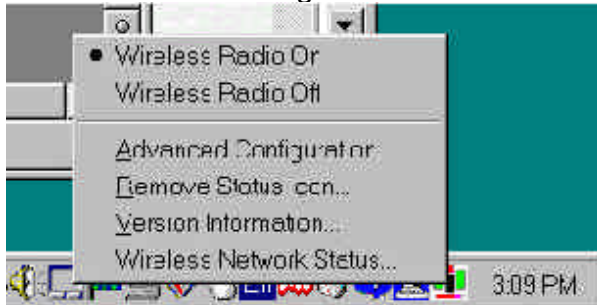
The first two items in this menu let you turn the wireless radio on or off. When the wireless radio is turned off, the following icon appears in the system tray.

✍✍ **Advanced Configuration**… launches the Configuration Utility with the Configuration menu displayed, as discussed in the following section. This lets you set configuration parameters, which change the behavior of the PRISM WLAN card.

✍✍ **Remove Status Icon**… removes the System Tray Icon. The driver continues to operate the card in the last commanded configuration. The next time you power up your computer, the configuration utility will return. You can also restart the Configuration Utility from the Start Menu by selecting Programs and PRISM Wireless LAN Configuration.

✍✍ **Version Information**… launches the Configuration Utility with the About menu selected, giving the revision level of the driver, configuration utility and firmware.

✍✍ **Wireless Network Status**… launches the Configuration Utility with the Link menu selected. This shows the link status, including Signal Strength and Link Quality. If you click the right mouse button on the System Tool Tray Icon, a Profile menu appears. This menu lets you quickly load an existing profile or create a new profile, as explained in the following section.

4. Starting the Configuration Utility

You can launch the Configuration Utility by clicking the left mouse button on the Configuration Utility icon and selecting Advanced Configuration… If the Configuration Utility icon is not displayed in the System Tray, you can restart the

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Configuration Utility from the Start Menu by selecting Programs and PRISM Wireless LAN Configuration.

The Configuration Utility consists of four menus: Configuration, Encryption, Link, and About. The following sections describe these menus in detail.

5. Configuration Menu

The Configuration menu lets you specify the operating parameters for your PRISM WLAN Interface card. When you first start the Configuration Utility, this menu is displayed. If another menu is displayed, you can display the Configuration menu by clicking on its tab in the Configuration Utility panel.
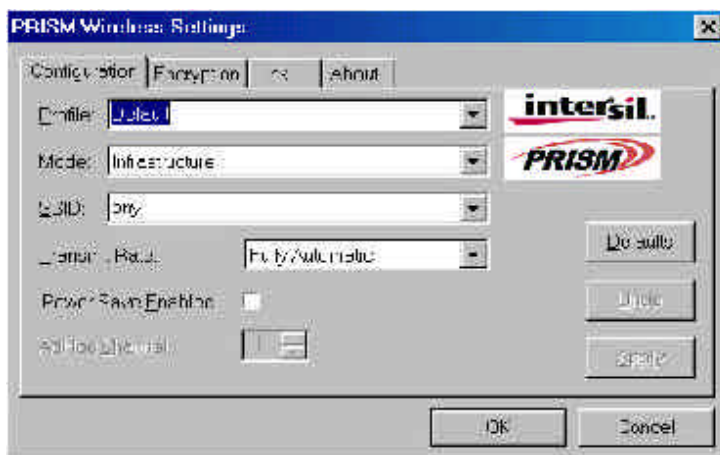
Setting the Profile

A profile is a named set of operating parameters for your PRISM WLAN Interface card. The Profile field lets you set values for all parameters by selecting a previously defined profile. Click the down arrow at the right of the Profile field to display the available profiles for your PRISM WLAN Interface card.

You will always have at least one profile, named Default. Initially, this profile contains the parameters configured at installation. You can modify this profile at any time after the installation. After changing parameters, you can save them in the profile named in this field by clicking the Apply button in the Configuration Utility panel.

You can also create additional profiles by typing a name in the Profile field. When you change the name in the Profile field and then click the Apply button, the Configuration Utility uses the current parameters for your card to create a separate

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profile. You can then switch between profiles by clicking the down arrow at the right of the Profile field, selecting a profile from the drop-down list, and clicking the Apply button.

The following example describes a situation in which you would want to create multiple profiles. Suppose that you use the wireless LAN at your work, but you also have a network in your home (with a wireless Access Point) for sharing an Internet connection and a printer between several computers. Suppose also that you have another office within your business which also has WLAN capability, but which is configured differently than your main office.

In this situation, you can create a different profile for each of these three environments. Each profile specifies the parameters used on a single network. Moving from one location to another, you only need to apply the appropriate profile to be able to participate in the local network.

Setting the Mode

The PRISM WLAN Interface card can operate in one of three modes, which are specified in the Mode field of the Configuration menu. Clicking the down arrow at the right of the Mode field displays the available modes.
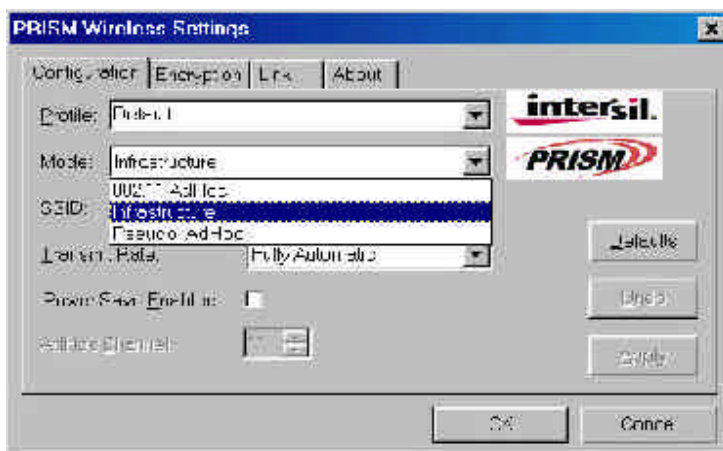
802.11 AdHoc Mode

IEEE 802.11, the standard on which the WLAN protocol is based, defines two modes to handle two separate needs. The first, called AdHoc (or IBSS) mode, is used when two or more wirelessly-enabled PCs wish to exchange data directly, without an Access Point. In this case the PCs can establish an AdHoc network in which they are the only members and over which they can exchange data. To

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exchange data, each computer participating in the AdHoc network must also specify the same SSID and AdHoc Channel in this menu.

Infrastructure Mode

The second mode defined by the IEEE 802.11 standard is called infrastructure mode, and is the primary application for WLAN operation. In this mode all data on the wireless network is directed to an Access Point, which then routes the data to the appropriate wireless station. The Access Point may also be configured to allow data to be bridged from the wireless network to wired networks.

To participate in a wireless LAN in infrastructure mode, every station and Access Point must specify the same SSID. In infrastructure mode, all available channels are scanned for traffic, so there is no need to specify a channel.

Pseudo AdHoc

A third mode has been defined by Intersil, and is used mainly for testing purposes.

Pseudo AdHoc mode allows computers to communicate even without exchanging compatibility data. For instance, you can send broadcast frames in this mode over a given channel and expect no interruption by beacons or other packets not involved in the test. This mode can be used for Packet Error Rate Testing, for example, to evaluate performance.

As with AdHoc mode, each computer participating in the Pseudo AdHoc network must also specify the same SSID and AdHoc Channel in this menu. However, note that this mode can only be used to communicate with other PRISM WLAN Interface cards.

Setting the SSID

The SSID is the Service Set IDentifier used by Access Points and stations to identify a wireless LAN. Your PRISM WLAN Interface card scans the available channels looking for an Access Point (in infrastructure mode) or another station (in AdHoc mode) which has specified this same SSID. It then attempts to associate with these Access Points or stations to form a wireless LAN.

To change the SSID, simply highlight it, type the new SSID, and click the Apply button.

In typical infrastructure applications a company will use a single SSID for all Access Points. If the radio is scanning and cannot find a channel when an Access Point is known to be in range, verify that the SSID is set correctly.

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Setting the Transmit Rate

The Transmit Rate field specifies the rate at which the radio in your PRISM WLAN Interface card transmits and receives data. You can view the available rates by clicking the down arrow at the right of the Transmit Rate field.
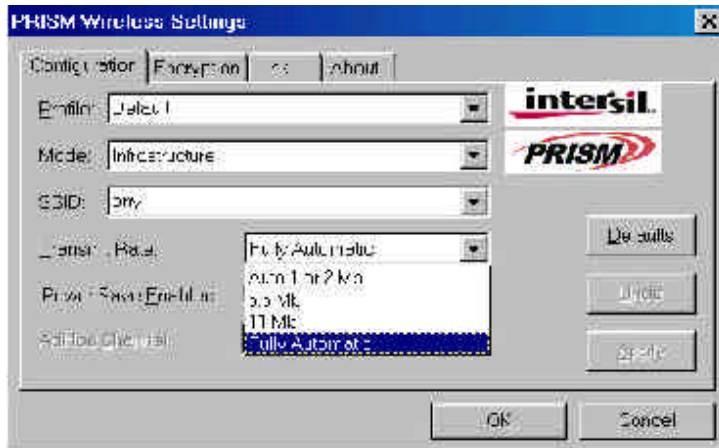
The transmit rate can be set to:
- **Fully Automatic** – your PRISM card chooses the highest available rate providing reliable communications based on the capabilities of the Access Point or station with which it communicates and on the received signal quality
- **Auto 1 or 2 Mb** – allows only 1 and 2 Mb/s operation
- **5.5 Mb** – allows only 5.5 Mb/s operation
- **11 Mb** – allows only 11Mb/s operation

To change the Transmit Rate, click the down arrow at the right of the field, highlight the rate you want to set, and click the Apply button.

Under most conditions, you should choose Fully Automatic as the transmit rate. In general, fixed rates are used only in test environments.

Enabling Power Save Mode

The IEEE 802.11 standard provides a Power Save Mode. In this mode your PRISM card listens for a beacon (a periodic frame which defines the network type and attributes) and determines the beacon interval. Between beacons the card puts itself to sleep, enabling power savings. At the time of the expected beacon the card wakes itself up and receives the beacon. The received beacon contains information about whether the Access Point or station has buffered frames for the card. If frames are available the card requests those frames until no more frames are available. The card then goes back to sleep until the next beacon.

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For Access Points that support power save mode and for stations equipped with WLAN cards, enabling this mode can significantly reduce power consumption, which is particularly important if the host computer is operating on battery power. However, be aware that power save mode also results in lowered transmission and reception speed on the wireless LAN.

Selecting the Ad Hoc Channel

When communicating in AdHoc or Pseudo AdHoc mode, you must specify a channel on which communications will take place. To specify a channel, click the up or down arrow at the right of the AdHoc Channel field until the channel you want to set appears, and then click the Apply button.

This field is greyed in infrastructure mode because the Access Point automatically selects the channel.
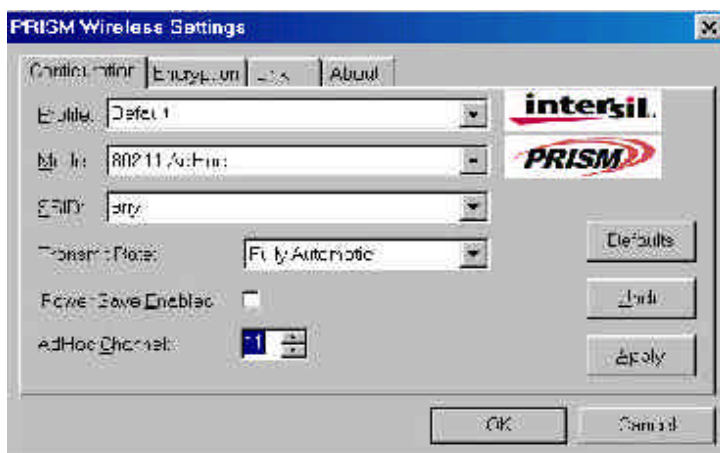
6. Encryption Menu

The Encryption menu lets you enable encryption and set the encryption keys. To see the available encryption methods, click the down arrow at the right of the Encryption {WEP} field.

There are two encryption methods available. The IEEE 802.11 specification defines Wired Equivalent Privacy (WEP) using a 64-bit key. This capability was extended by the industry to allow a 128-bit key. If you specify an encryption method, you will only be able to communicate with Access Points and stations that use the same encryption method and keys.

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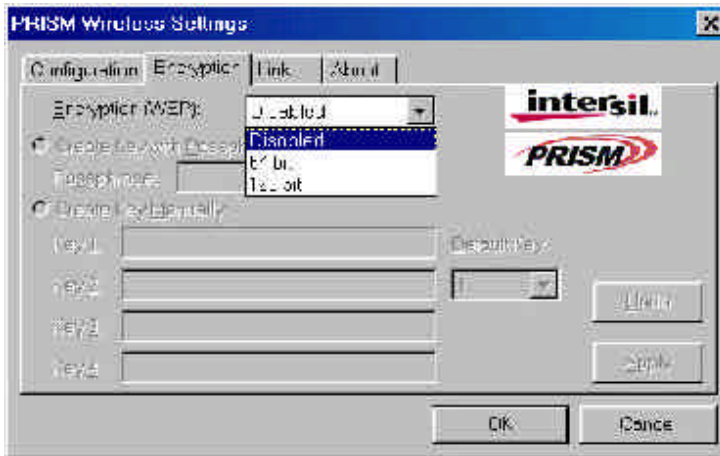
Disabling Encryption

To disable encryption, click the down arrow at the right of the Encryption field, select Disabled, and click the Apply button.

Enabling Encryption

To enable encryption, click the down arrow at the right of the Encryption field, select either 64 bit or 128 bit, and click the Apply button. After enabling an encryption method, you must then specify encryption keys, as described in the following sections.
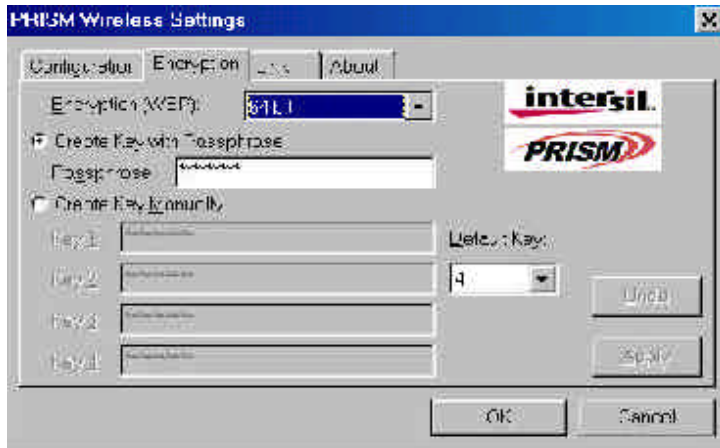
Creating Encryption Keys Using a Passphrase

To create encryption keys using a passphrase, click the radio button next to Create Key with Passphrase and type a character string in the Passphrase field. As you type, the Configuration Utility uses an algorithm to generate four keys used for encryption.
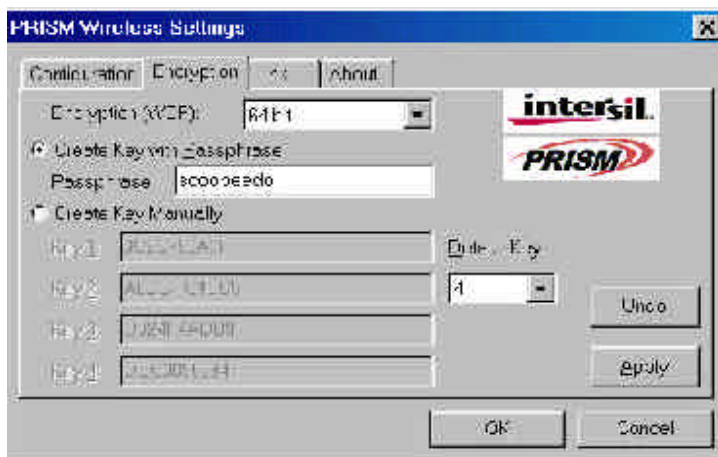
When you finish typing your character string and click the Apply button, the Configuration Utility uses asterisks to mask both your passphrase and the keys it generates.

Using a passphrase to generate the four keys makes it easy to set the same keys for all members of your wireless LAN.

Creating Encryption Keys Manually

If you want, you can create encryption keys manually by clicking the radio button next to Create Key Manually, as shown in the following illustration.

When you click this button, the cursor appears in the field for Key 1. For 64-bit encryption, you must type exactly 10 hexadecimal digits in each of the four key fields; for 128-bit encryption, you must type exactly 26 hexadecimal digits. You then click the Apply button to create your encryption keys. After you click the Apply button, the Configuration Utility uses asterisks to mask your keys.

Default Key

The Default Key field lets you specify which of the four encryption keys you use to transmit data on your wireless LAN. You can change the default key by clicking on the down arrow at the right of this field, selecting the number of the key you want to use, and then clicking the Apply button. As long as the Access Point or station with which you are communicating has the same key in the same position, you can use any of the keys as the default.

7. Link Menu

The Link menu provides information on the status of your communications with the wireless LAN.

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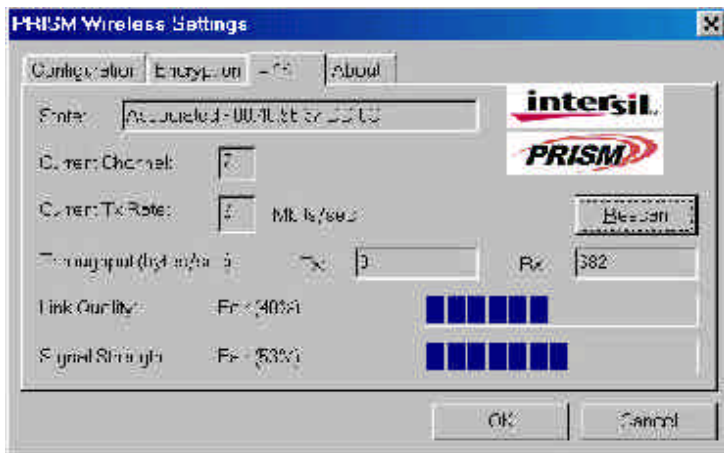
The fields in this menu provide the following information:

- 🖎🖎 **State**: shows the association state of your computer with the wireless LAN. The above illustration shows that your computer is associated with an Access Point and gives the Access Point's MAC address.
- 🖎🖎 **Current Channel**: shows the channel on which the connection is made. In Infrastructure mode, this number changes as the radio scans the available channels.
- 🖎🖎 **Current Tx Rate**: shows the highest transmit rate of the current association.
- 🖎🖎 **Throughput**: shows the short term transmit and receive throughput in bytes/second continuously updated.
- 🖎🖎 **Link Quality**: is based on the quality of the received signal of the Access Point beacon.
- 🖎🖎 **Signal Strength**: is based on the received signal strength measurement of the baseband processor of the Beacon signal.

You can click the Rescan button to force the radio to rescan all available channels. If your link quality or signal strength is poor, rescanning can be used to push the radio off a weak Access Point and search for a better link with another Access Point.

8. About Menu

The About menu provides information on the version of the Network Driver, the Configuration Utility, and the firmware in the PRISM WLAN Interface card. In addition, this menu also provides the MAC address of the PRISM card.
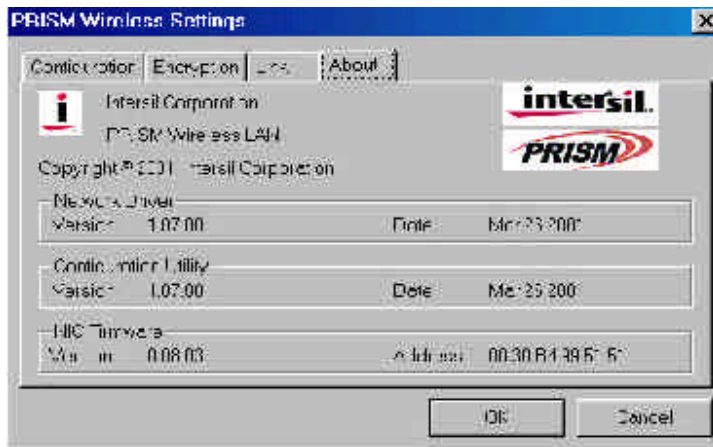
5. Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: To assure continued compliance, (example - use only shielded interface cables when connecting to computer or peripheral devices) any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and

(2) this device must accept any interference received, including interference that may cause undesired operation.

IMPORTANT NOTE:
FCC Radiation Exposure Statement:
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.
This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.